

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of: **Xingzhou JIN et al.**

Art Unit: 1796

Application Number: **10/501,452**

Examiner: **Ana WOODWARD**

Filed: **November 4, 2004**

Confirmation Number: **9405**

For: **SOLVENT-SOLUBLE BLOCK COPOLYIMIDE COMPOSITION AND PROCESS
FOR PRODUCING THE SAME**

Attorney Docket Number: **042586**

Customer Number: **38834**

DECLARATION UNDER 37 C.F.R. §1.132

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Xingzhou JIN, DO hereby declare and state:

I graduated from Chiba University with a Master's degree in Chemistry in March of
1999;

I have been employed by PIR&D CO. LTD. since April of 1999,

I am a co-inventor of the invention described and claimed in the above-identified
application;

I have read and understand the instant application and the Office Actions to date,
including the references cited therein;

Since 2001, I have worked in the development of the positive type photosensitive
polyimide. At the outset, I used as the diamine compound HOAB (3,3'-hydroxy-4,4'-diamino
biphenyl) made by Wakayama Seika Kogyo Co., LTD., as set forth at column 17, lines 51-52 of
U.S. Patent 6,890,626.

After that, I looked for commercially available diamines having a hydroxyl group during the development of the positive type of solvent-soluble photosensitive polyimide. Consequently, I have found that besides the aforesaid HOAB, there were 2,2'-Bis(3-amino-4-hydroxyphenyl)-hexafluoropropane made by Central Glass Co., LTD., and 3,3'-diamino-4,4'-dihydroxydiphenylsulfone made by Konishi Chemical, Ind. Co., LTD.

Both of the makers have called them Bis-AP-AF and BS-DA for short, respectively. These abbreviations lack consistency, although the substances referred to by them were similar in chemical structure to the HOAB used from the beginning.

Therefore, the in-house development team coined abbreviations for those compounds to make a difference with the chemical structure of the HOAB.

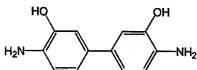
That is, 2,2'-Bis(3-amino-4-hydroxyphenyl)-hexafluoropropane was abbreviated as HOCF3AB to make it clear that it was HOAB having a characteristic chemical structure.

Likewise, 3,3'-diamino-4,4'-dihydroxydiphenylsulfone was abbreviated as SO2-HOAB to make it clear that it had SO2.

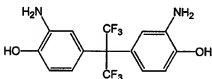
The foregoing is why there is a difference between Applicants' abbreviations and those used by the makers.

In the specification of the instant application, the abbreviation HOCF3AB is for (2,2'-Bis(3-amino-4-hydroxy-phenyl)-hexafluoropropane. However, there was a clerical error. 2,2'-Bis[4-(4-aminophenyl-phenoxy)phenyl]-hexafluoropropane was defined as related to HOCF3AB. However, it is clear that 2,2'-Bis[4-(4-aminophenyl-phenoxy)phenyl]-hexafluoropropane is hydroxyl free. The term "HO" clearly refers to

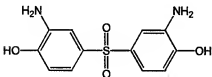
hydroxyl groups. Thus, it is obvious that HOCF3AB is not 2,2'-Bis[4-(4-aminophenyl-phenoxy)phenyl]-hexafluoropropane. See the chemical names and structures below. See also the chemical compounds shown below and as shown on pages 30-31 of Fluoro Chemicals 11th Edition published by Central Glass Co., LTD (attached hereto). Also attached hereto are chemical structure from Specialty Chemicals of Wakayama Seika and "Products List" from Konishi Chemical Ind. Co., Ltd.



Chemical Name: 3,3'-hydroxy-4,4'-diamino biphenyl
Maker's Abbreviation: HOAB
In-house Abbreviation: HOAB



Chemical Name: 2,2'-Bis(3-amino-4-hydroxyphenyl)-hexafluoropropane
Maker's Abbreviation: Bis-AP-AF
In-house Abbreviation: HOCF3AB



Chemical Name: 3,3'-diamino-4,4'-dihydroxydiphenylsulfone
Maker's Abbreviation: BS-DA
In-house Abbreviation: SO2-HOAB

Application No.: 10/501,452
Art Unit: 1796

Declaration under 37 C.F.R. §1.132
Attorney Docket No.: 042586

I declare further that all statements made of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

Xingzhou Jin
Name: Xingzhou JIN

8.5.2008
Date: August _____, 2008

Fluoro Chemicals

11th Edition

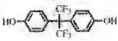
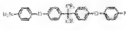
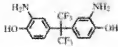
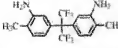
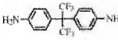
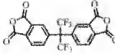
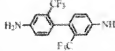
 **CENTRAL GLASS CO., LTD.**

Contents

	page
1. Products Line	2 - 3
2. Organic Products	4 - 51
2.1 Aromatic Products	
2.1.1 o-Derivatives	
2.1.2 m-Derivatives	
2.1.3 p-Derivatives	
2.1.4 MBT Aromatics	
2.1.5 Other Aromatics	
2.2 Aliphatic Products	
2.3 Monomers	
2.3.1 Aromatics	
2.3.2 Aliphatics	
2.4 Trillanes	
2.5 Chiral Compounds	
3. Inorganic Products	52 - 55
3.1 Gas Products	
3.2 Powder Products	
4. Polymer Products	56 - 59
4.1 Central Sol. Central Coat	
4.2 Other Polymer Products	

2.3 Monomers

2.3.1 Aromatics (1)

No.	Products	Chemical Formula
205	2, 2-Bis (4-hydroxyphenyl)-hexafluoropropane [BIS-AF]	
821	2, 2-Bis [4- (4-aminophenoxy) phenyl]-hexafluoropropane [BIS-AF-A]	
822	2, 2-Bis (3-amino-4-hydroxyphenyl)-hexafluoropropane [BIS-AF-AF]	
828	2, 2-Bis (3-amino-4-methylphenyl)-hexafluoropropane [BIS-AT-AF]	
827	2, 2-Bis (4-aminophenyl)-hexafluoropropane [BIS-A-AF]	
829	2, 2-Bis (3, 4-methylenedioxybenzoyl)-hexafluoropropane [6FDA]	
830	2, 2'-Bis (trifluoromethyl)benzidine [ABF-21]	

errored HOCF3AB

correct HOCF3AB

Properties		Remarks	
MW	: 336	CAS No.	: 1478-61-1
BP	: 400 °C	ENCS	: 4-1335
MP	: 162 °C	TSCA	: Registered
		EINECS	: 2160367
MW	: 518	CAS No.	: 60563-88-8
MP	: 163 °C	TSCA	: Registered
MW	: 366	CAS No.	: 83558-87-6
MP	: 240 °C	TSCA	: Registered
MW	: 362	CAS No.	: 116325-74-7
MP	: 105 - 106 °C		
MW	: 334	CAS No.	: 1095-78-9
MP	: 196 °C	TSCA	: Registered
MW	: 444	CAS No.	: 1107-00-2
MP	: 248 °C	EINECS	: 2141700
		TSCA	: Registered
MW	: 320	CAS No.	: 341-58-2
MP	: 183 - 184 °C		

CENTRAL GLASS CO., LTD. Fine Chemicals Sales Department (JAPAN)

Kanagawa-shi, Japan 341, Kanagawa

Yamanashi-Chuoh, Japan 401-0034, Japan

Phone +81-4-3238-7151

Fax +81-4-3239-1263

E-mail business@cgj.co.jp

Internet <http://www.cgj.co.jp/sales/index.html>

Central Glass International, Inc. (U.S.A.)

P.O. Box 729

Alachua, FL 32016-0729

Phone +1-904-367-7500

Fax +1-904-367-6030

Faxed +1-904-367-6030

Central Glass Europe Limited (U.K.)

Wigmore Road, London

Wokingham, UK

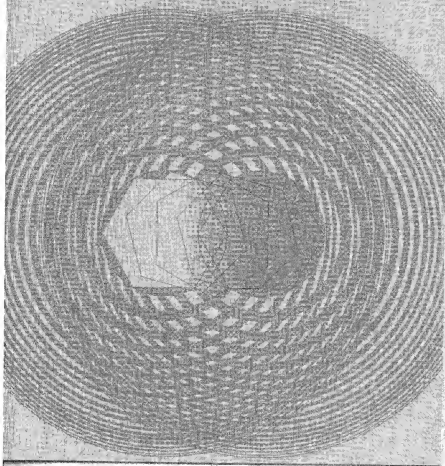
Phone +44 (1344) 400-0000

Fax +44 (1344) 400-0000

Internet <http://www.finechemicals.com>

(d)

SPECIALTY CHEMICALS
OF WAKAYAMA SEIKA



We, WAKAYAMA SEIKA KOGYO CO., LTD., hope this pamphlet provides you with some helpful information and opportunity to learn more about our products.

Now we are looking forward to having the pleasure of your valuable inquiries. We are entirely at your service.

Should there be any questions, comments and suggestions on our products, please feel free to contact WAKAYAMA SEIKA KOGYO CO., LTD. directly or through SEIKA & COMPANY, LTD.

Manufacturer:

WAKAYAMA SEIKA KOGYO CO., LTD.

1-82, 1-chome, Koraika, Wakayama, 641-0007 Japan.

Tel. (073) 423-3247

Fax: (073) 426-5378

Sales Division:

SEIKA & COMPANY, LTD.

8, Munamunjiwa-cho, Wakayama, 640-8232 Japan.

Tel: (073) 433-2191

Fax: (073) 428-3977

SEIKA GROUP URL






<http://www.waseika.com>

Apr. 2001 86.0 Printed in Japan

Products	Page
Dichloridine-H (DCB)	1
o-Dianisidine-H (DSH)	2
o-Tolidine	3
m-Tolidine-H	4
o-Tolidine disulfonic acid	5
Tetradine (TCB)	6
Bis Amine A	7
Bis Amine S	8
DPE	9
TPE-R	10
3,4'-DPE	11
BAPP	12
Sekacure-S	13
New Products	14-17
TECHNICAL PROFILE	18

Main products listed on pages 1 to 13 are now commercially available.

New products listed on pages 15 to 17 are semicommercially available.
(Some are still developmental.)

m-TB-HG 2,2'-Dimethyl-4,4'-diamino biphenyl  MW, 212.3	MF: C ₁₄ H ₁₄ N ₂ MP: 88°C (lit.) Assay: 99.0% min. (DV) Physical white powder JECN: No. 4-093 CAS: No. 84-67-3
TFMB 2,2'-Bis (trifluoromethyl)-4,4'-diamino biphenyl  MW, 320.2	MF: C ₁₂ H ₆ F ₆ N ₂ MP: 112°C (lit.) Assay: 99.0% min. (DV) Physical white powder CAS: No. 341-58-2
HAB 3,3'-Dihydroxy-4,4'-diamino biphenyl 4,4'-Diamino-3,3'-biphenyldiol  MW, 216.2	MF: C ₁₂ H ₁₀ N ₂ O ₂ Assay: 98.5% min. (DV) Physical gray powder CAS: No. 2173-98-0
FDA 6,9-Bis (4-aminophenyl) fluorene  MW, 318.5	MF: C ₂₄ H ₂₀ N ₂ MP: 233°C (lit.) Assay: 99% min. (DV) Light gray powder JECN: No. 4-16/9 CAS: No. 15409-84-0
TSN o-Tolidine sulfato  MW, 274.3	MF: C ₁₄ H ₁₄ SO ₃ MP: 300°C (decomp.) Assay: 99% min. (HPLC) Oliveish yellow powder JECN: No. 5-005 CAS: No. 71226-98-9

based HOAB



WAKAYAMA SEIKA KOGYO CO., LTD.
SEIKA & COMPANY, LTD.



JCGA
JAPANESE
CIGARETTE
GROWERS
ASSOCIATION



JAB
JAPANESE
ALUMINUM
BROS. ASSOCIATION

(e)

Products List

**KONISHI
CHEMICAL IND. CO., LTD.**



86-93



No.0128 ISO9002
No.E449 ISO14001



R002

**All our products are produced in conformance with quality system standard ISO 9000.
Our goal is to ensure customer satisfaction and reliability through quality management.**

私達の全ての製品はISO9000により認証された品質システムで生産されています。
私達の目標は、品質管理を通じてお客様の満足と信頼を高めることです。

We have been certified ISO 14001(Environmental Management System).

**We are endeavoring to promote environmental protection by
reducing environmental burdens and economizing the use of resources and energy.**

私たちはISO14001（環境マネジメントシステム）の認証を受け、
環境負荷の低減、省資源、省エネルギーなど、
環境保全活動のスパイラルアップに努めております。



Index

P 2 ~4

Commercial Products

P 6 ~18

Laboratory Products

Bisphenol S Derivatives

P 20 ~26

Diphenyl Sulfone group

P 26 ~29

Others

(Sulfonic acid, Sulfonylchloride, Sulfonamide)

P 29 ~33

Principal Reactions

P 34 ~35

Main Equipments

P 36

Commercial Products

C-1 BS	<i>Bisphenol S (4,4'-Dihydroxy diphenyl sulfone)</i>	<i>... 6</i>
C-2 SIP	<i>5-Sulfoisophthalic acid</i>	<i>... 10</i>
C-3 5-HIA	<i>5-Hydroxy isophthalic acid</i>	<i>... 10</i>
C-4 SIPM	<i>5-Sulfoisophthalic acid dimethyl ester sodium salt</i>	<i>... 11</i>
C-5 SIPA	<i>5-Sulfoisophthalic acid monosodium salt</i>	<i>... 11</i>
C-6 MSB	<i>m-Sulfobenzoic acid monosodium salt</i>	<i>... 12</i>
C-7 DSB	<i>3,5-Disulfobenzoic acid disodium salt</i>	<i>... 12</i>
C-8 PSA	<i>Phenol sulfonic acid solution</i>	<i>... 13</i>
C-9 DCBS	<i>1,2-Dichlorobenzene-4-sulfonic acid sodium salt</i>	<i>... 13</i>
C-10 DAS	<i>3,3'-Diamino diphenyl sulfone</i>	<i>... 14</i>
C-11 N15DS	<i>Naphthalene-1,5-disulfonic acid disodium salt</i>	<i>... 14</i>
C-12 NDS	<i>Naphthalene disulfonic acid disodium salt</i>	<i>... 15</i>
C-13 NTS	<i>Naphthalene trisulfonic acid trisodium salt</i>	<i>... 15</i>
C-14 MB	<i>m-Nitrobenzene sulfonic acid sodium salt</i>	<i>... 16</i>
C-15 PAMS	<i>4-Methoxyaniline-2-sulfonic acid</i>	<i>... 16</i>
C-16 PAOS	<i>4-Methoxyaniline-3-sulfonic acid</i>	<i>... 17</i>
C-17 MA	<i>Metanilic acid</i>	<i>... 17</i>
C-18 A25DS	<i>Aniline-2,5-disulfonic acid monosodium salt</i>	<i>... 18</i>
C-19 A24DS	<i>Aniline-2,4-disulfonic acid</i>	<i>... 18</i>

Laboratory Products

Bisphenol S Derivatives

L-1	24BS	2,4'-Dihydroxy diphenyl sulfone	... 20
L-2	THS	2,2',5,5'-Tetrahydroxy diphenyl sulfone	... 20
L-3	BS-MIPE	4-Isopropoxyphenyl-4'-hydroxyphenyl sulfone	... 20
L-4	BS-MBE	4-Benzyloxyphenyl-4'-hydroxyphenyl sulfone	... 21
L-5	BS-MME	4-Methoxyphenyl-4'-hydroxyphenyl sulfone	... 21
L-6	BS-MHE	4-n-Hexyloxyphenyl-4'-hydroxyphenyl sulfone	... 21
L-7	BS-MOE	4-n-Octyloxyphenyl-4'-hydroxyphenyl sulfone	... 22
L-8	BS-EO	4,4'-Bis(2-hydroxy ethoxy) diphenyl sulfone	... 22
L-9	BS-DOE	4,4'-Di-n-octyloxy diphenyl sulfone	... 22
L-10	BS-DBE	4,4'-Dibenzyloxy diphenyl sulfone	... 23
L-11	3BAPS	Bis[4-(3-aminophenoxy)phenyl] sulfone	... 23
L-12	4BAPS	Bis[4-(4-aminophenoxy)phenyl] sulfone	... 23
L-13	BS-DM	3,3'-Dimethyl-4,4'-dihydroxy diphenyl sulfone	... 24
L-14	BS-TM	3,3',5,5'-Tetramethyl-4,4'-dihydroxy diphenyl sulfone	... 24
L-15	BS-2TM	4,4',5,5'-Tetramethyl-2,2'-dihydroxy diphenyl sulfone	... 24
L-16	BS-4TM	2,2',5,5'-Tetramethyl-4,4'-dihydroxy diphenyl sulfone	... 25
L-17	BS-DC	3,3'-Dichloro-4,4'-dihydroxy diphenyl sulfone	... 25
L-18	BS-DN	3,3'-Dinitro-4,4'-dihydroxy diphenyl sulfone	... 25
L-19	BS-DA	3,3'-Diamino-4,4'-dihydroxy diphenyl sulfone	... 26
L-20	BS-PR	Bisphenol-S/Phenol resin	... 26
L-21	BS-PSR	Bisphenol-S/Phenolsulfonic acid resin	... 26

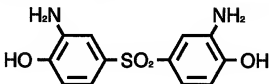
Diphenyl Sulfone group

L-22	DCS	4,4'-Dichloro diphenyl sulfone	...26
L-23	TCS	3,3',4,4'-Tetrachloro diphenyl sulfone	...27
L-24	DNS	3,3'-Dinitro diphenyl sulfone	...27
L-25	DNDCS	3,3'-Dinitro-4,4'-dichloro diphenyl sulfone	...27
L-26	4DAS	4,4'-Diamino diphenyl sulfone	...27
L-27	TAS	3,3',4,4'-Tetraamino diphenyl sulfone	...28
L-28	DSSK	Diphenyl sulfone-3-sulfonic acid potassium salt	...28
L-29	PYS	4,4'-Dipyridyl sulfone	...28
L-30	BPDS	Biphenyl-4,4'-disulfonic acid disodium salt	...29
L-31	DETS	Diphenylether-2,2',4,4'-tetrasulfonic acid tetrasodium salt	...29

Others (Sulfonic acid, Sulfonylchloride, Sulfonamide)

L-32	MBA	Nitrobenzene-3-sulfonic acid	...29
L-33	MBAM	Nitrobenzene-3-sulfonic acid ammonium salt	...29
L-34	OAPS	2-Methoxyaniline-5-sulfonic acid	...30
L-35	PCAS	4-Chloroaniline-2-sulfonic acid	...30
L-36	PFAS	4-Fluoroaniline-2-sulfonic acid	...30
L-37	PCS	Chlorobenzene-4-sulfonic acid sodium salt	...30
L-38	PCSC	Chlorobenzene-4-sulfonylchloride	...31
L-39	PCSA	Chlorobenzene-4-sulfonamide	...31
L-40	CMS	Catechol-4-sulfonic acid sodium salt	...31
L-41	CDS	Catechol-3,5-disulfonic acid disodium salt	...31
L-42	SOP	4-Sulfophthalic acid	...32
L-43	SOPS	4-Sulfophthalic acid sodium salt	...32
L-44	TMBS	1,3,5-Trimethylbenzene-2-sulfonic acid	...32
L-45	PSA-Na	Phenolsulfonic acid sodium salt dihydrate	...32
L-46	SIPA-Li	5-Sulfoisophthalic acid monolithium salt	...33
L-47	m-DEB	m-Diethylbenzene	...33
L-48	CIM	2-(2-Chlorophenyl)-4,5-diphenylimidazole	...33
L-49	CIM-S	2-(2-Chlorophenyl)-4,5-diphenylimidazole sulfonic acid	...33

Commercial Products

NO. L-19**Formula**

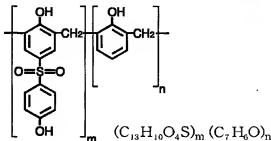
M.W. 280.3

 $C_{12}H_{12}N_2O_4S$ **Abbreviation BS-DA****Name 3,3'-Diamino-4,4'-dihydroxy diphenyl sulfone****ENCS**

Registry NO. —

CAS

Registry NO. 7545-50-8

UsesIntermediate for dyestuff
Intermediate for epoxy resin**NO. L-20****Formula****Abbreviation BS-PR****Name Bisphenol-S/Phenol resin****ENCS**

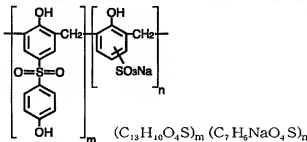
Registry NO. —

CAS

Registry NO. 77810-18-5

Uses

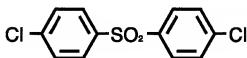
Waterproof and oilproof treatment for assistant agent

NO. L-21**Formula****Abbreviation BS-PSR****Name Bisphenol-S/Phenolsulfonic acid resin****ENCS**

Registry NO. 9-2533

CAS

Registry NO. 71832-81-0

UsesNylon fixing agent
Paper fixing agent
Cationic substance binder for fiber (polyester, cellulose)**NO. L-22****Formula**

M.W. 287.2

 $C_{12}H_8Cl_2O_2S$ **Abbreviation DCS****Name 4,4'-Dichloro diphenyl sulfone****ENCS**

Registry NO. 3-2160

CAS

Registry NO. 80-07-9

UsesIntermediate for polyethersulfone resin
Intermediate for organic synthesis (pharmaceuticals, dyestuff, curing agent etc.)



KONISHI CHEMICAL IND.CO.,LTD.

3-4-77, KOZAIKA WAKAYAMA, 641-0007 JAPAN

TELEPHONE 073 (425) 0331

FACSIMILE 073 (425) 6116